

PAP SMEAR: AN IMPORTANT SCREENING TECHNIQUE FOR PREVENTING AND DETECTING CERVICAL CANCER

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ABSTRACT

Background:

Cervical cancer is the second most preventable cancer in women worldwide, and the fifth leading cause of cancer deaths. Cervical cancer is less common than it once was in developed nations due to early detection through Pap smear technique. However, in developing countries especially the Sub Saharan region, the number of deaths resulting from cervical cancer is unquantifiable as a result of inaccurate data.

Method:

A review of literature, utilizing the PUBMED and those obtained through nominal search and general text books was done to determine the epidemiology, overview, screening methods and obstacles, risk factor, guideline for prevention and health promotion of cervical cancer through Pap smear on women of child bearing age.

Result: Most of the early cervical cancer detections were from developed countries showing that early cervical cancer rarely produces symptoms, and if present, may go unnoticed as a thin watery vaginal discharge. When discharge, irregular bleeding or pain and bleeding after sexual intercourse occur, the disease may have advanced.

Conclusion: Population-based cervical cancer screening in women has shown to reduce mortality. Advanced disease could be prevented if all women have access to Pap smear and gynecological care and avail themselves to utilize the opportunity.

KEY WORDS: Pap Smear: Women Health: Cervical Cancer Prevention.

INTRODUCTION:

Pap smear is an important method for screening cervical cancer. Global efforts to prevent the disease have focused on screening women using Pap smears, and treating precancerous lesions. Before the introduction of the Pap smear by Dr. George Papanicolaou in the 1930s, cervical cancer was the most common cause of cancer death in women (McNeely 2003; McNeely 2001) . Pap smear screening, also called cytological screening, has achieved impressive results in most developed nations with 100% efficacy, with a geographical variation of the incidence in Europe and North America as compared to South America, Asia and Africa (Rogo *et al*, 1990) . Pap smears screening in developed nations have resulted in increased detection of preinvasive lesions and decreased cancer death rates however, in developing countries especially the Sub Saharan region, the number of deaths resulting from cervical cancer is unquantifiable secondary to inaccurate data. In a major developing country like Nigeria and many other developing nations, current reports have noted an increase in the incidence and mortality rate (Rogo *et al*, 1990; Bickley and Szilagyi, 2003) . Knowledge deficits, ignorance, poverty, societal norms and religious beliefs daunt efforts to initiate Pap smear in health care settings in the Sub Saharan region and most developing countries. Pap smear screening can identify preinvasive lesions that can prevent cervical cancer (Nanda *et al*, 2000). Whereas cervical cancer cells are difficult to detect or prevent; annual pelvic examination with a Pap smear is a relatively inexpensive method of early detection. Health care providers can encourage women to follow this health practice by providing non-stressful examinations that are educational and supportive and offering opportunity for patients to ask questions and clarify misinformation. If more women could be made to understand that the gynecological examination and Pap smear do not have to be uncomfortable and embarrassing, early detection rates would likely be improved, and lives would be saved. Factors that enhance early detection of cervical cancer are discussed. The health care providers' role in access and utilization of Pap smear is crucial and may prevent the delay of detection of cervical cancer until advanced stage.

Epidemiology:

Whereas cervical cancer is less common than it once was because of early detection of cell changes by Pap smear in the United States and other developed nations, cervical cancer in the developing world is on the increase(Nanda *et*

al, 2000). Approximately, 80 percent of all new cases are found in developing countries, where early detection methods are often not available, and almost none of these women have had a Pap smear (Brown and Garber, 1999) The toll of increasing malignancies needs to be considered where all of the cervical cancer deaths occur. Cervical cancer incidence theoretically can be reduced by as much as 90 percent where screening quality and coverage are high (Koutsky *et al*, 2002).

The Pap smear: An overview:

The Pap smear is a cytological test used to detect abnormal cervical cancer cells. Because of the effectiveness of the Pap smear as a screening method, cervical cancer is now less common than breast cancer or ovarian cancer (Jemal *et al*, 2006). The procedure involves gently rotating a small spatula at the cervical os followed by a cervical brush-like device, rotated in the os, to obtain cervical secretions. Pap smear is best done if the woman is not menstruating, or has no other frank bleeding, unless where there is high suspicion of vaginal neoplasia (cancer bleeding), because blood obscures a proper reading of cells. To avoid washing away cellular materials, the patient is instructed not to douche before having a Pap smear taken. The tissue obtained is smeared and spread on a glass slide, and fixed immediately, or immersed into a solution (see FIG. 1 A-C). The slides are sent to a cytology laboratory and evaluated by a trained cytologist or a cytotechnician who determines the cell classification. A specimen of any purulent material appearing at the cervical os is obtained for culture. In a patient who has a high risk of infection, routine cultures for gonococcal and chlamydial organisms are recommended, because of the high incidence of both diseases and the complications of pelvic infection, fallopian tube damage, and subsequent infertility (Jemal *et al*, 2006). Most protocols suggest that women with low-grade abnormalities return for regular follow-up smears until the abnormality either resolves or persists, warranting further investigation. High-grade pre-invasive disease generally is further evaluated by colposcopy (examination of the cervix with a magnifying scope) and biopsy; precancerous lesions are then treated through surgical removal or ablation.

This review study was done to bring to the notice of our increasing population an important screening tool in the prevention of cervical cancer.

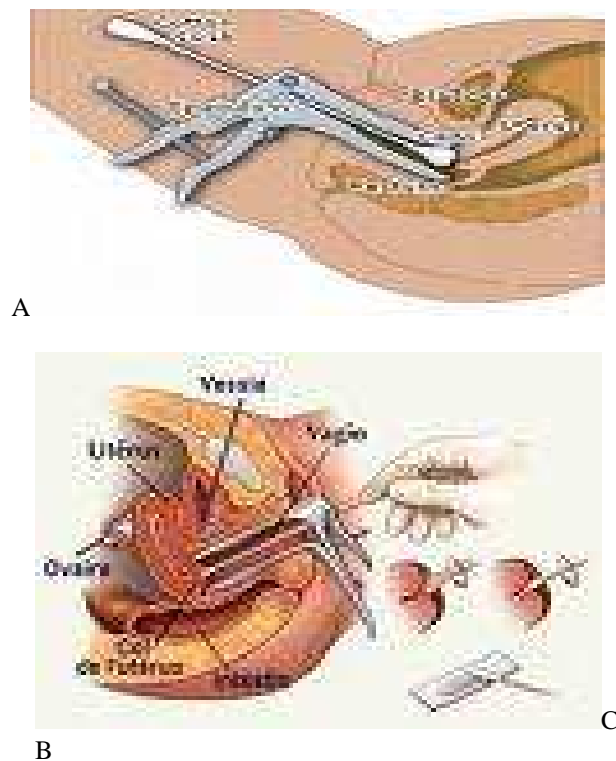


FIGURE 1: Methods of using a cotton swab to obtain cervical secretions for cytology. (A) Speculum in place and the swab in position at the cervical os. (B) The tip of the swab is placed in the cervical os and the swab rotated 360 degrees, firmly but nontraumatically. (C) Cellular material cling to the swab is then smeared smoothly on a glass slide. Smear is then sprayed with fixative and then sent to laboratory for cytological study. Source American Cancer Society.

Cervical cancer Screening:

Screening is the identification of persons within an asymptomatic population who have or are likely to develop specified disease at a time when intervention may result in the improvement of the progress of the disease. Population-based cervical cancer screening in women between the ages of 30 to 40 and beyond by Pap smear has shown to reduce mortality by 35-40% (Schiffman 2004). However economic constraints and knowledge deficits in developing countries impede the availability of Pap smears screening while it's efficacy in the developed world remains well proven (Rogo *et al* 1990). Periodic screening, and follow-up evaluation of women in their 30s or older is an acceptable, cost-effective approach to preventing cervical cancer, assuming that the screening approach is accurate and coverage high (Goldie *et al*, 2004).

Obstacles that hinder effective Pap smear screening

- Intensive infrastructural requirements and the relatively high rate of false negative test results (low test sensitivity) are some of the obstacles that make providing effective Pap smear screening problematic in most developing countries. Effective Pap smear screening requires significant infrastructural support. Pap smear screening efforts can succeed only when implemented in an environment that has a reliable infrastructure (Lentz *et al*, 2004). Minimum requirements for establishing an effective Pap smear screening effort include:
- Well-trained Pap smear providers (including non-physicians): Ongoing training of providers ensures that they can successfully perform pelvic exams and obtain and prepare adequate cervical samples. Training non-physicians to provide Pap smear screening is cost-effective and makes the services more widely accessible to the women who need them (Murphy *et al* 2004).
- Initial and ongoing access to supplies and equipment: Cytology programs require consistent access to supplies such as slides, and fixatives. Programs also must have equipments such as exam tables, specula, a light source and specimen-tracking forms or log books to function effectively.
- Linkage transportation, to reliable cytology laboratory: Any program providing Pap smear screening must be linked to a cytology laboratory. Effective training and quality control mechanisms must be in place to ensure that providers are skilled to interpret slide specimens. Strong linkages between the screening program and the laboratory ensure that specimens are transported in a timely manner and test results are clearly communicated to the screening programs.
- Timely communication of test results to screened women: All women screened by cytology need to be notified of their test results. Since immediate results are not available, cytology programs must have functional information systems in place to ensure that results are communicated promptly. These systems ensure that all results are recorded, missing results are traced and abnormal results are followed up.
- Effective referral system for diagnosis and treatment: Programs performing cytologic screening will need to develop an effective referral system for women who need treatment for precancerous lesions or whose diagnosis is unclear. Treatment or palliative care referrals for women found to have cancer also are necessary.

When any of these key requirements is missing, cytology programs are not likely to be successful (Wilson *et al*, 2004). In developing countries with limited resources, the above mentioned obstacles are the greatest pitfalls to initiating Pap smear screening, which prevents cervical cancer and most gynecological malignancies. Other impediments are the failure to provide key decision makers with up to date evidence on the burden of cervical cancer and the need to initiate prevention and save lives of women who die from cervical cancer. Unfortunately, bereaved families and loved ones of cervical cancer patients naively remain adamant as they have the notion that such deaths occurred as a result of witchcraft spells; a lack of understanding of economic factors that influence the risk of cervical cancer. Policy makers in the developing world should be made to understand that efforts should be devoted to the prevention of these untimely demises because the economic and health benefits of tackling these gynecological problems, outweighs the cost of ignoring the problem (Shinn, 2004; Franco *et al*, 2001).

Risk Factor for Cervical Cancer

- Sexual activity:
- Multiple sex partners.
- Early age (younger than 20) at first coitus (exposes the vulnerable young cervix to potential viruses from partner that traumatize the cervix with the likelihood of carcinogenous growth)
- Sex with uncircumcised males
- Sexual contact with males whose partners have had cervical cancer
- Early childbearing age
- Exposure to diethylstilbestrol (DES) in utero
- Family history of cervical cancer
- Low socioeconomic status (may be related to early marriage and early childbearing)

- Nutritional deficiencies (folate, beta-carotene and vitamin C level are lower in women with cervical cancer than in women without it)
- Chronic cervical infection
- Overweight

Courtesy: American Cancer Society 2009

Cervical Cancer Screening Guidelines For prevention And Health Promotion

- Routine Pap smear annually for all women who have been sexually active or have reached age of 18 (After a woman has had three consecutive satisfactory normal annual examinations, the Pap test may be performed less frequently at the discretion of her physician)
- Pelvic examination every 1 to 3 years with Pap test beginning at age 18 to age 40, annually for women over 40
- Endometrial tissue sample at menopause and if at high risk and thereafter at the discretion of her physician

Courtesy: American Cancer Society Recommendation for Early Detection of Cervical Cancer

CONCLUSION:

Identification of persons within an asymptomatic population who have or are likely to develop specified disease at a time when intervention may result in the improvement of the progress of the disease is a crucial tool to saving lives. Population-based cervical cancer screening in women between the ages of 30 to 40 and beyond by Pap smear screening has shown to reduce mortality by 35-40% (Schiffman 2004) . However economic constraints and knowledge deficits in developing countries impede the availability of Pap smears screening while it's efficacy in the developed world is well proven. Early cervical cancer rarely produces symptoms, and if symptoms are present, they may go unnoticed as a thin watery vaginal discharge often noticed during sexual intercourse or douching. When symptoms such as discharge, irregular bleeding or pain and bleeding after sexual intercourse occur, the disease may have advanced. Advanced cervical cancer disease could be prevented if all women have access to Pap smear and gynecological care and avail themselves to utilize the opportunity. Pap smear screening can identify preinvasive lesions and prevent cervical cancer. Annual pelvic examination with a Pap smear is a relatively inexpensive method of early detection. Nurses/health care providers can encourage women to follow this health practice by providing non-stressful examinations that are educational and supportive and offering opportunity for patients to ask questions and clarify misinformation. Annual pelvic examination with a Pap smear is a relatively inexpensive method of early detection. This underscores the importance of nurses and healthcare givers in helping detect cervical cancer on the naive vulnerable women.

Key Recommendations:

- Screen all women in their 30s and 40s whether sexually active or not at least once before expanding services to other age groups or increasing screening frequency
- Screen for high risk factors for cervical cancer: sexual activity at an early age, multiple sexual partners, or history of sexually transmitted diseases (STD)
- Many young adults and even most matured women are reluctant to have these examinations and screenings. Therefore it is important for health care providers to explain the purpose of the test and to encourage all women to begin this preventive measure by age 20 at least.
- Preventive counseling should include delaying first intercourse, avoiding herpes virus infection (HPV), education about reproductive health and safer sex, smoking cessation, and consideration of HPV immunization.
- Notification of the patients is often the responsibility of health care providers. Pap smear follow-up is essential because appropriate follow-up can prevent cervical cancer.
- Many women do not adhere to recommendations, particularly those women who are young, those of low socioeconomic status, those who have difficulty coping with diagnosis and those without social support
- Cultural practices that allow multiple sexual partners whether single or married should be prohibited.
- Polygamous husbands indirectly expose the wives to various forms of sexually transmitted diseases from their multifarious women.
- Fear, knowledge deficit and child care responsibilities have all been identified by women as reasons for poor follow-up. Interventions are tailored to meet the needs of the particular patients. Intensive telephone counseling, tracking system, brochure, video and financial incentives have all been used to encourage follow-up.

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